JOHN CURTIN
COLLEGE OF THE ARTS

Name ____________________ **Due Date** ___________ **/25**

Year 8 AEP Pathway 1 Investigation : Reaction Time Marking Rubric

	1	2	3	4	5
Introduction Sampling Techniques	States the problem to be investigated and the data to be collected	States the population and chooses a sample that will be representative of this population	Explore the practicalities and implications of obtaining representative data Categorizes the type of data to be collected	Makes a prediction about the means and proportions of the population.	Explain issues related to the collection of data.
Data Collection	Data collected however not suitable for the problem stated	Collects relevant data however little thought given to presentation	Data collection in a clear tabulated format, example a table, and a suitable size sample chosen	Uses secondary data collection techniques	Uses secondary data collection techniques and a modified spreadsheet is created of the results
Data Analysis	Attempts to calculate	Calculates the means accurately	Calculates the mean, median and range	Explaining the purpose of the different statistical measures, calculates the spread and comments on its significance	Explains the effect of outliers on means and medians in the data. Calculates quartiles, percentiles and other relevant proportions in the data
Data Representation	Graphical display but not a good representation of data	Simple appropriate graph with correct headings and format	Some thought given to the type of graphical display and graph chosen is a good representation of the type of data	Graph shows direct comparison of the variables stated in the original problem.	Graphs in report are exemplary. Well though out structure and give the best visual representation of the data collected. Graphs should have been created in an Excel spreadsheet
Conclusion	Statement given however does not represent the data collected in report		Uses statistical knowledge from investigation to clarify the conclusion		Evaluates media reports and other documents supporting/refuting conclusions. Bibliography included.

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Investigation Yr 8 AEP

Reaction Times

Name ________________________

Sports reaction times

Sprinting

The International Association of Athletics Federations (IAAF) believes that a human takes at least a tenth of a second to react to the start line gun; any faster implies a false start. This figure is based on tests that show the human brain cannot hear and process the information from the start sound in under 0.10 seconds

Racket sports

Badminton requires faster reaction times than tennis and squash, although table tennis may require even faster reaction times. The fastest reactions in badminton are required in men's doubles, where returning smashes can reach 320kmph. In table tennis, with smashes in excess of 100kmph, a player typically has only 0.3 seconds to react as the ball travels the length of the table (2.74m).

In tennis with serves around 225 km an hour. Again, you have about 0.3 of a second if you're at the other end and position yourself return or take the new position to receive the next serve.

Cricket

22 yards gives the batsman about half a second to react to a ball delivered at 160kmph you've got a bit more time, about 0.5 of a second to react.

Football

A goalkeeper has just 0.3 seconds to react to a penalty struck at 125kmph from the penalty spot, 12 yards out from the goal.

IN THIS INVESTIGATION YOU WILL EXPLORE THE REACTION TIMES OF STUDENTS AND WRITE A REPORT ON YOUR FINDINGS

Here are some questions you might like to consider:

> **Do some people respond more quickly with their preferred hand than with their non-preferred hand? Do boys react more quickly than girls? Do year eights react more quickly than year twelves? Do your reactions vary depending on the time of day or the sort of thing you are being asked to react to? Do your reactions improve with training/practice? What else do you think affects people's reaction times?**

INTRODUCTORY STATEMENT

1. **THE PROBLEM**: Look at the 'questions to consider' on the previous page. Choose one of these as your focus question. Write out this in your introductory statement.
2. **CHOOSE A SAMPLE**: Decide on the population for your investigation. Choose an appropriate unbiased sample that will represent your population. Write down who, how big and how you will sample a group representative of the population. Explain your sampling techniques in your introductory statement and the type of data collected. Make a prediction about what you will discover in your investigation.

GETTING THE SAMPLE (RAW DATA)

3. **CONDUCT THE SAMPLE:** Conduct your sample and record your results in a suitable format. Some resources you could use are:

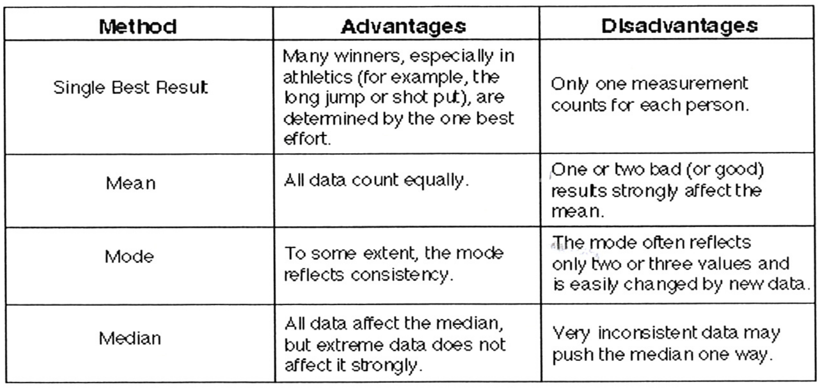
Reaction Time Tester http://getyourwebsitehere.com/jswb/rttest01.html

Census at Schools RANDOM SAMPLER will enable you to get a sample of up to 200 students from around Australia sanved in an Excel spreadsheet.
http://www.abs.gov.au/websitedbs/CaSHome.nsf/Home/Entry+Page.es

DATA ANALYSIS

4. **MEASURES OF CENTRAL TENDANCY** – Calculate the relevant averages for your sample, discuss the relevance of any outliers.

This link could be helpful: http://www.youtube.com/watch?v=MY66lmqDwcA&list=UUK-VnIPpL2sTGhqnkpVayBA&index=72&feature=plcp



Method	Advantages	Disadvantages
Single Best Result	Many winners, especially in athletics (for example, the long jump or shot put), are determined by the one best effort.	Only one measurement counts for each person.
Mean	All data count equally.	One or two bad (or good) results strongly affect the mean.
Mode	To some extent, the mode reflects consistency.	The mode often reflects only two or three values and is easily changed by new data.
Median	All data affect the median, but extreme data does not affect it strongly.	Very inconsistent data may push the median one way.

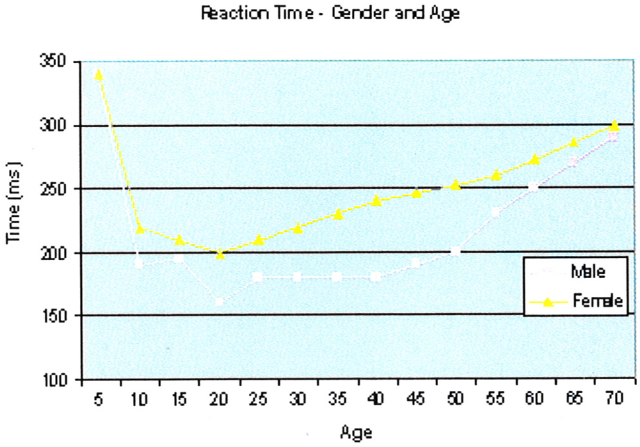
5. **SPREAD** – Discuss the spread of your results for example, calculate the range.

REPRESENT THE DATA

6. Represent your results in an appropriate graph

For example

Box and Whiskers, Stem and Leaf, Scattergraph (Left vs Right)



For example.

What does this graph represent?

Think carefully about the type of graph you will use. Is it representative of the numerical data?

CONCLUSION

Finalise your report with a conclusion of your results. Be sure to back up your summary with links to the previous tasks

Example starter sentences

FROM MY SAMPLES I NOTICE?? ANYTHING UNUSUAL (CLUSTERS, GROUPS)

I THINK THAT???

COMPARING THE TWO SAMPLES ???

BACKED UP BY???

FURTHER RESEARCH STATES ???

ANSWERING THE INITIAL QUESTION I HAVE DISCOVERED THAT ???